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L1 143 S ENDOTHELIN (7N) INTEGRIN
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Department of Clinical and Molecular Endocrinology, Graduate School, Tokyo Medical and Dental University, Japan.

Both integrins and endothelins (ETs) are known to play important roles in vascular remodeling via proliferation, apoptosis, and migration of vascular smooth muscle cells (VSMCs), whose dysfunctions have been implicated in the pathogenesis of end-organ damage associated with hypertension and arteriosclerosis. However, whether there is any interaction between endothelin-1 (ET-1) and integrins remains unknown. Therefore, the aim of the present study was to elucidate whether ET-1 regulates the expression of integrin alpha(v) in rat VSMCs. ET-1 dose- and time-dependently suppressed the integrin alpha(v) messenger RNA (mRNA) transcripts, as quantified by a real-time quantitative polymerase chain reaction (PCR) method, and decreased the transcriptional activity of integrin alpha(v) gene, as demonstrated by integrin alpha(v)-luciferase assay. The inhibitory effect of ET-1 on integrin alpha(v) gene expression was abrogated by an ETA receptor antagonist (BQ123) but not by an ET(B) receptor antagonist (BQ788). ET-1 also suppressed the cell surface expression of integrin alpha(v)beta5 and the adhesion to vitronectin, but not to fibronectin. These results demonstrate that the adhesion of vitronectin to rat VSMCs is inhibited by ET-1 via the ET(A) receptors by suppressing integrin alpha(v) gene transcription, suggesting that ET-1 is involved in regulation of vascular integrin alpha(v) gene expression.

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